Remarks

Claims 1-17 and 163-165 are pending in the Application.

Claims 1-17 and 163-165 stand rejected.

Claims 1-2, 15-17 and 165 are amended herein.

Claim 166 has been added herein.

I. REJECTION UNDER 35 U.S.C. § 102(a)

Examiner has rejected Claim 165 under 35 U.S.C. § 102(a) as being anticipated by *Tohji et al.*, "Purification Procedure for Single-Walled Nanotubes," *J. Phys. Chem. B,* 1997, 101, pp. 1974-1978 ("*Tohji*"). Office Action at 2.

Examiner contends "*Tohji* teaches on pg. 1975 purification of SWNTs in hot oxidant. The presence of torroids is deemed inherent, as a variety of carbon species are synthesized when nanotubes are made." Office Action at 2.

Applicant respectfully traverses this rejection. Anticipation requires each and every element of the claim to be found within the cited prior art reference. The Examiner admits that torroids are not disclosed in *Tohji*. Office Action at 2. Applicant respectfully submits that the presence of fullerene torroids is not inherent in *Tohji*.

Regarding inherency, a prior art reference may anticipate without disclosing a feature of the claimed invention if that missing characteristic is necessarily present, or inherent, in the single anticipating reference. see *Continental Can Co. v. Monsanto Co.,* 948 F.2d 1264, 1268, 20 U.S.P.Q.2d 1746, 1749 (Fed. Cir. 1991). For inherency to be shown, extrinsic evidence must be presented that makes "clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Id* Inherency cannot be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is legally insufficient. *Id.,* 948 F.2d at 1269, 20 U.S.P.Q.2d at 1749.

There is nothing in *Tohji* that reflects torroids *necessarily* would be synthesized by the process taught therein.

Furthermore, *Tohji* is not prior art to the claimed invention of Claim 165. The present Application is the 35 U.S.C. § 371 national application of International Application Number PCT/US98/04513 filed on March 6, 1998. Accordingly, the present Application has a filing date of March 6, 1998. M.P.E.P. § 1893.03(b).

Moreover, the present Application claims priority benefits to the following provisional applications: [1]

(1) Provisional United States Patent Application Serial Number 60/067,325, filed on December 5, 1997;

(2) Provisional United States Patent Application Serial Number 60/064,531, filed on November 5, 1997;

(3) Provisional United States Patent Application Serial Number 60/063,675, filed on October 29, 1997;

(4) Provisional United States Patent Application Serial Number 60/055,037, filed on August 8, 1997;

(5) Provisional United States Patent Application Serial Number 60/047,854, filed on May 29, 1997; and

[1] Applicant notes that in the Declaration and Power of Attorney for Patent Application, dated December 22, 1999 ("the Declaration"), Applicant further listed these six provisional applications for priority purposes. Upon recent review of this Declaration, an error was identified on Page 2, under the heading "Prior United States Application(s)." The Declaration inadvertently referred to a claim for benefit under 35 U.S.C. §120, based upon prior United States Patent Application No. 08/687,665, (now United States Patent 6,183,714 B1) when, in fact, no such priority claim was being made. Accordingly, this Application does not claim priority benefits to Patent Application Serial No. 08/687,665, as originally stated in the Declaration. This error of the Declaration was inadvertent and arose without any deceptive intent. On May 8, 2003, Applicant submitted a Supplemental Declaration And Power Of Attorney For Patent Application to correct this error.

(6) Provisional United States Patent Application Serial Number 60/040,152, filed on March 7, 1997 ("the '152 Application").

A review of the '152 patent application discloses the following process:

1. A method for purifying a mixture comprising single-wall carbon nanotubes and amorphous carbon contaminate, said method comprising the steps of:
   (a) heating said mixture under oxidizing conditions sufficient to remove the said amorphous carbon; and
   (b) recovering a product comprising at least about 80% by weight of single-wall carbon nanotubes.

See Claim 1 of the '152 patent application; *see also* the '152 patent application, at 6-9. Thus, putting aside the portion of Claim 165 reciting "wherein the product comprises fullerene torroids," there can be no dispute that all of the other elements of Claim 165 were disclosed in the '152 patent. It would be irreconcilable for the Examiner to argue that *Tohji* inherently disclosed the presence of torroids because "a variety of carbon species are synthesized when nanotubes are made" and take the position that the '152 patent application does not likewise have such an inherent disclosure.

Attached hereto as Exhibit A is a true and correct copy of an excerpt from the *Journal of Physical Chemistry B*, Volume 101, No. 11, in which *Tohji* appears. Exhibit A shows that *Tohji* appeared in the March 13, 1997 issue of the *Journal of Physical Chemistry B*. Accordingly, *Tohji* was published after March 7, 1997, which was the date the '152 patent application was filed. Thus, *Tohji* is not a prior art reference to the present application as it does not reveal that the claimed invention of Claim 165 was described in a printed publication "***before*** the invention thereof by the applicant for patent." 35 U.S.C. § 102(a)(emphasis added).

As a result of the foregoing, Applicant respectfully requests that the Examiner withdraw the rejection of Claim 165 under 35 U.S.C. § 102(a) as being anticipated by *Tohji*.

II. REJECTIONS UNDER 35 U.S.C. § 103(a) OVER *TOHJI* TAKEN WITH *BANDOW AND/OR BONARD*

Examiner has rejected Claims 1-17 and 163-164 under 35 U.S.C. § 103(a) as being obvious over *Tohji* taken with *Bandow et al.,* "Purification of Single-Wall Carbon Nanotubes by Microfiltration" *J. Phys. Chem. B*, **1997**, Vol 101, pp. 8839-8842, ("*Bandow*") and/or *Bonard et al.*, "Purification and Size Selection of Carbon Nanotubes", *Advanced Materials*, 1997, Vol. 9, No. 10, pp 827-831, ("*Bonard*"). Office Action at 2.

Examiner contends "Tohji teaches on pg. 1975 purification of SWNTs in hot oxidant. This does not teach a surfactant, however Bandow/Bonard teach purifying nanotubes with a surfactant such as SDS. Using both purification techniques is an obvious expedient to gain the effect of both, to make very pure nanotubes." Office Action at 2.

Applicant respectfully traverses these rejections.

Claims 166 & 2-17. Applicant has added new Claim 166, which coincides with the original Claim 1 of the '152 patent application, filed March 7, 1997. Applicant has then amended the dependent Claims 2-17 so that these will depend directly or indirectly from Claim 1. Support for these claims are found in the '152 patent application. *See, e.g.*, Claims 2-16 of the '152 patent application. Accordingly, for the reasons stated above, *Tohji* is not prior art to Claim 166; nor is it prior art to dependant Claims 2-17. Likewise, *Bandow*, and *Bonard* are not prior art for Claim 166 and its dependent claims 2-17. This is because of all these claims have an effective filing date of March 7, 1997. 35 U.S.C. § 120; *see also* M.P.E.P. § 1893.03(c); *Ralston Purina Co. v. Far-Mar-Co., Inc.*, 772 F.2d 1570, 1575, 227 U.S.P.Q. 177, 179 (Fed. Cir. 1985).

As noted above, *Tohji* was published after March 7, 1997.

Moreover, *Bandow* appeared in the October 30, 1997 issue of *Journal of Physical Chemistry B*. (Attached hereto as Exhibit B are the true and correct copies of excerpts from *Journal of Physical Chemistry B*, Volume 101, No. 44, in which *Bandow* appears.) Accordingly, *Bandow* was published after the effective filing date of Claims 166 and 2-17 the present Application.

Attached hereto as Exhibit C are true and correct copies of an INSPEC search that shows the publication date of *Bonard* in *Advanced Materials*, Volume 9, No. 10, was August 8, 1997. Accordingly, *Bonard* was also published after the effective filing date of Claims 166 and its dependent claims 2-17.

Claims 1 and 163-164. Claim 1 requires the recovering step to comprise "wherein the product is washed with a solution comprising a surfactant." Claim 1 (and thus also dependent Claims 163-164) is not obvious over *Tohji* taken with *Bandow* and/or *Bonard*. *Tohji* teaches hydrothermal purification of nanotubes and does not mention or suggest the use of a surfactant. *Bandow* and *Bonard* each tout the use of surfactants to purify the nanotubes without the use of oxidation.

A *prima facie* showing of obviousness requires the Examiner to provide a motivation or suggestion to combine or modify the prior art references to make the claimed invention. M.P.E.P. § 2142. The showing must be clear and particular. *In re Lee*, 277 F.3d 1338, 1343, 61 U.S.P.Q.2d 1430, 1433-34 (Fed. Cir. 2002); *In re Kotzab*, 217 F.3d 1365, 1370, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000); *In re Dembiczak*, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999). Broad conclusory statements regarding the teaching of multiple references, standing alone, are not evidence. *Id.* Thus, Examiner's argument that it would have been obvious to combine the purification techniques of the prior art to gain the effect of both, to make very pure nanotubes, is insufficient to answer the question as to why both of these techniques should be combined.

Examiner's argument is even more deficient because *Bandow* and *Bonard* expressly teach against the use of oxidation to purify single-wall carbon nanotubes, because oxidative means would damage the nanotubes and lead to lower yields. *See Bonard*, p. 827, col. 1, par. 2, and p. 830, col. 2, par. 4.; *see also Bandow*, p. 8839, Abstract, and p.8841, col. 2, par. 2. A prior art

reference must be considered in its entirety, including those portions that would lead away from the invention. M.P.E.P. § 2141.02; *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983). Therefore, it would not have been obvious to combine the teachings of *Tohji* with either *Bandow* or *Bonard* with regard to Claim 1 and its dependent claims 163-164.

Accordingly, Applicant respectfully requests the Examiner withdraw the rejection of the claims under 35 U.S.C. § 103(a) as being unpatentable over *Tohji* in view of *Bandow* and/or *Bonard.*

III. CONCLUSION

As a result of the foregoing, it is asserted by Applicant that the Claims in the Application are now in a condition for allowance, and respectfully request allowance of such Claims.

Applicant respectfully requests that the Examiner call Applicant's attorney at the below listed number if the Examiner believes that such a discussion would be helpful in resolving any remaining problems.

Respectfully submitted,

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